DOCUMENT RESUME

ED 145 419 CS 203 541

AUTHOR Hvistendahl, J. K.; Kahl, Mary R.

TITLE Roman v. Sans Serif Body Type; Readability and Reader Preference. News Research Bulletin No. 2.

INSTITUTION American Newspaper Publishers Association, Washington, D.C.
PUB DATE 17 Jan 75
NOTE 12p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Design Preferences; Journalism; *Media Research; Newspapers; Periodicals; *Printing; *Public Opinion; *Publishing Industry; *Readability; Reading Rate; Reading Research
IDENTIFIERS *Typography

ABSTRACT

Many typographers have already decided that sans serif type is more pleasing to readers and more functional than traditional roman type. The findings of this study, which was designed to assess the readability of, and reader preference for, these two styles, lead to the opposite conclusion. To determine preferences, 200 subjects of various ages compared newspaper stories set in roman and in sans serif type. Every age group in the sample showed a clear preference for roman type. In addition, reading speeds were found to reflect a similar trend: in half the trials, readers could read roman type significantly faster, while in none of the trials could they read sans serif type significantly faster. Although the study was not designed to measure the effect of column width, additional data suggest that width may be a more important factor in readability than is type style. (KS)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED145419

AMERICAN NEWSPAPER PUBLISHERS ASSOCIATION
P.O. Box 17407, Dulles International Airport, Washington, D.C. 20041

News Research Bulletin No. 2 January 17, 1975

ROMAN v. SANS SERIF BODY TYPE; READABILITY AND READER PREFERENCE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

An ANPA
News Research Center Study

By
J. K. Hvistendahl, professor of Journalism, Iowa State University, and Mary R. Kahl, extension editorial assistant, Kansas State University

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

American Newspaper Publishers Association

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

CS203 544

Acknowledgments

The authors wish to acknowledge the ANPA for the grant that made this study possible, and the following newspapers which supplied type for the experimental paper: Iowa—Ames Tribune, Cedar Rapids Gazette, Davenport Times-Democrat, Dubuque Telegraph Herald, Ft. Madison Democrat, Mason City Globe Gazette, Perry Daily Chief; Minnesota—Mankato Free Press, Minneapolis Star and Tribune, Worthington Globe.

Copyright © 1975
American Newspaper Publishers Association

Conclusions

If the type faces used in this study are typical, and if the subjects are typical, it can be said that on the whole Roman type is more readable when used for textual matter than is sans serif type. Further, the evidence is strong that readers prefer Roman type to san serif type when they are presented a choice.

If, as many magazine typographers have already decided, sans serif type is more pleasing to readers and more functional than the traditional Roman type, it should prove so in a controlled readability experiment. The findings in this study seem to suggest the opposite. Serifs, or end strokes, on typographic characters in Roman type may aid in the reading process. Until more evidence is available, newspaper typographers would be advised to take a cautious approach toward using sans serif type for textual matter.

Quantitative differences between readability of Roman and sans serif faces appear slight — on the order of 7-10 words per minute for the average reader. Yet, the cumulative ease of reading to the newspaper reader over one Sunday newspaper or one week can be considerable. This coupled with the finding that almost two-thirds of those readers tested expressed a preference for Roman type — including those in the youngest adult categories — suggests that the Roman faces traditionally used in newspaper textual matter may be more functional, hence more "modern," than the sans serif faces which many magazines have adopted, and with which many newspapers have been experimenting.

Although the study was not designed to measure the effect of column width, the data seem to suggest that column width may be a more important factor in readability than the use of a Roman type face. Optimum readability apparently can be obtained by the use of a Roman type face combined with column widths in the range of 14 picas.

Background of the Study

Although newspaper readers spend thousands of hours a year reading, little scientific evidence is available on how efficiently or inefficiently the reading matter is presented to them. The most recent complete and systematic study of typography was completed in 1940, *How to Make Type Readable,*[1] by Miles A. Tinker and Donald G. Paterson, University of Minnesota psychologists. In general, Tinker and Paterson found that traditional type sizes used in newspaper textual matter were too small for reading efficiency, and the narrow newspaper columns were too narrow for optimum readability.

Despite Tinker and Paterson, column widths remained at the inefficient 11 to 12 pica measures and type sizes ranged from 7 to 8 points until well after World War II. Because of the post war newsprint shortage, column widths were reduced by the process of stereotype mat shrinkage which further contributed to the already less-than-optimum readability of newspaper columns. Reader complaints induced some newspapers to increase the point size of type and a few pioneering newspapers such as the Wall Street Journal, the Louisville Courier-Journal and the Los Angeles Times went so far as to increase both the point size of body type and column widths to the optimum standards recommended by Tinker and Paterson.

The use of "cold type" and electronic typesetting by the photographic process have ushered in a new era in newspaper typography. The strictures of metal type are disappearing. More type faces in more varieties and sizes are available. Few mechanical barriers to changes in newspaper typography are left. The question remains, however, as to which of the new should be adopted, and which of the old should be retained.

A case in point is the research undertaken in this study. The study was initiated by an inquiry from the Minneapolis Tribune to the ANPA News Research Center as to whether the modern sans serif types (sometimes incorrectly called Gothic) were suitable for newspaper textual matter, or whether it was better to stick to the traditional Roman faces. The literature on typographic research offered little help.

[1]**This book is out of print. However, most of the same material is contained in *Legibility of Print*, by Miles A Tinker, published by Iowa State University, Ames [1963].**

Tinker and Paterson, who contributed much of what is known about the effect of type size and column width, barely touched on this problem. Except in advertising, sans serif type was rarely used for textual matter in the 1930's. In one study, however, the two psychologists found that a sans serif face (Kabel light) was read 2.2 percent slower than Scotch Roman, a type face used widely in book publishing. When readers were asked to rank seven type faces, they ranked the sans serif face next to last.

The Study Design

This study was designed to determine whether Roman type or sans serif type is the more readable in newspaper columns, and to determine reader preference for one or the other. Four 5-column tabloid front pages were devised, with matched stories printed on standard offset newsprint in both Roman and sans serif type faces. Four pairs of stories were selected from metropolitan newspapers outside of Iowa, where the research was to be conducted, to reduce likelihood that the readers would have read the stories before they were tested. The stories were edited to make each pair as nearly equivalent as possible; each had an equal number of words, sentences, syllables and paragraphs, as well as the same number of characters.

The trial stories were sent to cooperating newspapers in the Midwest where they were set in the Roman and sans serif type faces in current use and returned in proof form. Proofs in which the two forms of type had identical or similar alphabet lengths were incorporated into the experimental newspaper. Two pairs of stories were set in 10.5 pica column widths and two were set in 14 pica column widths. Thus the study included four different combinations of Roman and sans serif type faces in two common type widths.

Choosing the Subjects

Because of the necessity of timing each respondent and interviewing him at some length, a truly random sample of readers was considered impractical. However, an effort was made to choose as subjects a wide range of readers from various age, economic and social strata. Subjects were obtained from such sources as the West Des Moines Opportunity Center, a Christian church, a neighborhood

Housewife doubles as firefighting nurse

Because Marlene Plymouth, an Allwood Township mother of two teenagers, can stand the heat she gets out of the kitchen sometimes—to help fight fires.

As a member of the township's volunteer department, she may be the only woman fire fighter in this urban area.

Though Mrs. Plymouth is not expected to climb ladders or pull people out of burning buildings, her admiring fellow workers insist she would be willing to try, if the necessity arose.

The unique sideline is a labor of love for the 38-year-old housewife. Last year her earning were $182 as a fire fighter; but she spent about $200 on clothes for the job, as her uniforms had to be tailor made.

"It looks as if it were made for a small boy," she says.

A licensed practical nurse, she is assigned to the department's ambulance. Professionally, she works three days a week at Richmond Community Hospital.

She had been going voluntarily on runs in the ambulance until she realized she had no liability insurance coverage. Eighteen months ago she became an official, fully covered department member.

She is paid $4 an hour for work with the Fire department but turns most of it back to the Fire Fund.

"The fund needs it more than I do," she explains.

The fire department and ambulance are run jointly by Leonard and Allwood townships, and the ambulance service is free to residents. It is supported by fire millage and the townships' general funds.

The fire department recently bought a $13,000 five-patient ambulance, to Mrs. Plymouth's joy. "I cired with frustration over the inadequacies of the old ambulance, and now I'm crying with joy over the new one," she added.

Fire fighting is a family thing for the Plymouth family as husband George has been a department member for 19 years. Mrs. Plymouth's father was an original member of the Leonard fire department, and she was born across from the fire hall.

Housewife doubles as firefighting nurse

Because Marlene Plymouth, an Allwood Township mother of two teenagers, can stand the heat she gets out of the kitchen sometimes—to help fight fires.

As a member of the township's volunteer department, she may be the only woman fire fighter in this urban area.

Though Mrs. Plymouth is not expected to climb ladders or pull people out of burning buildings, her admiring fellow workers insist she would be willing to try, if the necessity arose.

The unique sideline is a labor of love for the 38-year-old housewife Last year her earning were $182 as a fire fighter; but she spent about $200 on clothes for the job, as her uniforms had to be tailor made.

"It looks as if it were made for a small boy," she says.

A licensed practical nurse, she is assigned to the department's ambulance. Professionally, she works three days a week at Richmond Community Hospital.

She had been going voluntarily on runs in the ambulance until she realized she had no liability insurance coverage. Eighteen months ago she became an official, fully covered department member.

She is paid $4 an hour for work with the Fire department but turns most of it back to the Fire Fund.

"The fund needs it more than I do," she explains.

The fire department and ambulance are run jointly by Leonard and Allwood townships, and the ambulance service is free to residents. It is supported by fire millage and the townships' general funds.

The fire department recently bought a $13,000 five-patient ambulance, to Mrs. Plymouth's joy. "I cired with frustration over the inadequacies of the old ambulance, and now I'm crying with joy over the new one," she added.

Fire fighting is a family thing for the Plymouth family as husband George has been a department member for 19 years. Mrs. Plymouth's father was an original member of the Leonard fire department, and she was born across from the fire hall.

Fig. 1 Subjects were found to read Roman type [above] significartly more rapidly than sans serif type in stories which were set identically. Subjects also expressed preference for stories set in sans serif type.

library and a senior citizens group. Two hundred subjects were tested over a three-week period. The reading tests were administered individually by a number of graduate students and volunteer interviewers. Subjects were asked to read four stories, two in Roman and two in sans serif type. One of each set was in the 10.5-pica measure and the other was in the 14-pica measure. The order of presentation was systematically randomized to avoid any possible order effect.

Subjects were instructed to read at their normal reading speed, and were unobtrusively timed by stop watch. After they had completed the reading, they were presented with another set of identical stories in the experimental newspaper, one set in Roman type and one set in sans serif, and asked to express their preference (see example in Fig. 1 on preceding pages).

The Research Findings

After interviews with 200 subjects were completed, the data were entered on IBM cards and were analyzed, using a computer program for the social sciences developed at Stanford University.

Data in Table 1 indicate that reading speeds were significantly faster with Roman type in two of the four trials. The third trial also favored Roman type but did not reach the pre-determined level of significance (the chance that a difference as great as that observed would be in error fewer than five times in 100 trials). In the fourth trial, the scorces between the two type faces were virtually identical.

Since two of the four trial stories in Roman type showed significantly faster reading speeds, the third approached significance, and the fourth showed virtually identical scores, it can be said that in half the trials readers could read Roman type significantly faster, but in none of the trials could they read sans serif type significantly faster.

While overall reading speeds were faster for the stories set in Roman type, subjects in the two lowest age groups (15—25 and 26—35) tended to read the stories in the two type faces at about the same rate. Women were found to read sans serif type at about the same rate as Roman type, but men read Roman type faster on all four story trials. Heavy newspaper readers and moderate newspaper readers were found to read Roman type more rapidly, in all four trials, while light readers read stories in the two type faces at about the same rate.

Table 1
Reading Speed, Roman and Sans Serif Faces

	Roman faces	Reading speed in seconds	Sans Serif faces	Reading speed in seconds	Stat. Significance
			10.5 Pica Column Width		
Story A—250 words	Imperial	52.13	Helvetica	51.93	0.786
Story C—300 words	Royal	64.48	Futura	66.35	0.007*
			14 Pica Column Width		
Story B—400 words	News #2	79.37	Sans Heavy	81.16	0.111
Story D—325 words	News Bold	63.15	News Sans	64.91	0.036*

***Significant differences, T distribution**

Reader Preferences

To determine preferences, subjects were asked to compare identical stories set in Roman and sans serif. The stories had identical headlines, identical content and occupied identical positions on the experimental pages. Eight different stories of varying length were judged by subjects. Four of the stories were set in 14-pica measure and four in 10.5-pica measure.

On all eight of the trial stories, more readers chose the stories set in Roman type than in sans serif (Table 2). The preference for Roman was statistically significant for five of the eight stories. Almost three-quarters of the subjects (73.2%) said they preferred Roman type in the four stories set in the 14-pica measure, and almost two-thirds (62.7%) said they preferred Roman type in the four stories set in the 10.5-pica measure.

Every age group in the sample showed a clear preference for Roman type. Even the youngest age group, which was found to read sans serif type at about the same rate as Roman, expressed a preference for Roman type in seven of the eight experimental stories. The over-65 age group appeared to be more inclined to sans serif type than the younger group, but even they chose sans serif type in only

Table 2
Reader Preference for Identical Stories
In Roman and Sans Serif Type

	Prefer Roman		Prefer Sans Serif	
	No.	%	No.	%
10.5 Pica Column Width				
Story 1— 250 words	27	54.0	23	43.0
Story 2— 250 words	29	59.2	20	40.8
Story 3— 300 words	32	65.3*	17	34.7
Story 4— 300 words	35	72.9*	13	27.1
TOTAL	123	62.7*	73	37.2
14 Pica Column Width				
Story 5— 400 words	40	80.0*	10	20.0
Story 6— 400 words	43	86.0*	7	14.0
Story 7— 325 words	34	69.4*	15	30.6
Story 8— 325 words	28	57.1	21	42.9
TOTAL	145	73.2*	53	26.7
GRAND TOTAL	268	68.0*	126	31.9

*Significant differences, sign test, .05 level

two of the eight possible comparisons. The data do not support the assumption that younger readers prefer the more modern sans serif types, while the older readers prefer the traditional Roman types.

When subjects were compared by education in their preference for Roman and sans serif type, the results were similar. Those in every education group chose Roman type in more story comparisons than sans serif type. The subjects showing the highest preference for sans serif were those who had not finished high school. These subjects chose sans serif on two of the eight trials; one was indeterminate.

Both men and women expressed a strong preference for stories in Roman type. The only subjects who showed an equal preference for sans serif and Roman type were those who defined themselves as light readers. These subjects chose sans serif in four of the eight stories.

The Effect of Column Widths

Although the study was not designed to assess the effect of column width on readability, the findings suggest that column width may have a greater effect on readability than the use of Roman type. When all eight type faces used in the experiment are compared on the basis of reading speed, it is apparent that readability of type in 14-pica columns is greater whether Roman or sans serif type is used. It will be noted in Table 3 that the four stories set in the 14-pica measure were read at a higher rate per minute than the stories set in the narrower 10.5-pica measure.

From the data in Table 3, it would appear that a well designed Roman type in combination with wider columns would produce optimum readability.

Table 3
Reading Speed by Column Width and Type Face

Rank	Type Face	Words per Minute	Roman or Sans Serif	Column Width
1	News Bold	308.4	Roman	14 picas
2	News #2	301.8	Roman	14 picas
3	News Sans	300.0	Sans Serif	14 picas
4	Sans Heavy #2	295.2	Sans Serif	14 picas
5	Helvetica	288.6	Sans Serif	10.5 picas
6	Imperial	287.4	Roman	10.5 picas
7	Royal	279.0	Roman	10.5 picas
8	Futura	251.4	Sans Serif	10.5 picas